Claims

Please amend the claims as follows:

1. (Currently amended) A receiver, comprising:

a demodulator unit configured for demodulating one or more of a plurality of signals; and

a processing engine communicatively coupled to the demodulator unit and configured for generating a ~~matrix~~ vector that is a linear combination of one or more interference vectors, wherein each of the interference vectors comprises a component of an interfering signal and wherein the ~~matrix~~ vector is used to selectively substantially reduce energy from one or more of the signals.

2. (Original) The receiver of claim 1, further comprising a searcher finger configured for selecting signals for demodulation from said plurality of signals and for determining one or more codes from selected signals.

3. (Original) The receiver of claim 2, wherein the demodulator unit comprises a plurality of demodulator fingers configured for demodulating the selected signals.

4. (Original) The receiver of claim 2, wherein the determined codes comprise code offsets in time from one another.

5. (Currently amended) The receiver of claim 1, wherein the ~~matrix~~ vector comprises a composite interference vector constructed using code information and amplitude information.

6. (Previously presented) The receiver of claim 1, wherein the demodulator unit is assigned to at least one of a multipath signal from a base station in soft handoff with the mobile unit or to a strong multipath signal from a base station not in soft handoff. .

7. (Original) The receiver of claim 1, wherein the receiver further comprises a radio frequency front end configured for receiving the signals.

8. (Previously presented) The receiver of claim 7, wherein the processing engine comprises a channel selector configured for selecting components of determined codes from signals selected for energy reduction.

9. (Original) The receiver of claim 8, wherein the processing engine is further configured to generate a cancellation operator used to substantially reduce the energy of the signals selected for energy reduction.

10. (Original) The receiver of claim 9, wherein the cancellation operator comprises a projection operator $P_s^{\perp}$ having the following form:

$$P_s^{\perp} = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

11. (Original) The receiver of claim 10, wherein the processing engine comprises an application unit configured for applying the projection operator $P_s^{\perp}$ to a desired code x to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^{\perp}$ is applied to the desired code according to the following form:

$$P_s^{\perp} x = \left(I - S(S^T S)^{-1} S^T\right)x.$$

12. (Currently amended) The receiver of claim_2, wherein the determined codes are spreading codes.

13. (Previously presented) The receiver of claim 12, wherein the spreading code is a short code.

14. (Previously presented) The receiver of claim 1, wherein the processing engine further comprises a Fast Walsh Transform module configured for correlating a despread received signal against a plurality of Walsh codes.

15. (Original) The receiver of claim 1, wherein the signals are selected from a group consisting of cdma2000 signals and cdmaOne signals.

16. (Currently amended) A method for reducing interference to a desired signal, comprising:

demodulating at least one of a plurality of signals;

constructing at least one interference vector from the at least one demodulated signal of a plurality of signals, wherein the at least one interference vector comprises components of an interfering signal;

generating a ~~matrix~~ vector that is a linear combination of one or more interference vectors; and

using the ~~matrix~~ vector to selectively substantially reduce energy from one or more of the signals thereby reducing interference.

17. (Previously presented) The method of claim 16, further comprising searching for one or more signals from said plurality of signals for assigning to at least one demodulating unit.

18. (Previously presented) The method of claim 16, further comprising determining one or more codes for signals assigned to said demodulating unit.

19. (Previously presented) The method of claim 16, wherein generating comprises summing a plurality of said interference vectors to form a composite interference vector.

20. (Previously presented) The method of claim 16, wherein constructing the said at least one interference vector comprises constructing the interference vector using code information and amplitude information.

21. (Currently Amended) The method of claim 16, wherein using the ~~matrix~~ vector comprises generating a cancellation operator for application to a desired code to substantially reduce the energy of the signals selected for energy reduction.

22. (Original) The method of claim 21, wherein generating the cancellation operator comprises generating a projection operator $P_s^{\perp}$ having the following form:

$$P_s^{\perp} = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

23. (Original) The method of claim 22, further comprising applying the projection operator $P_s^{\perp}$ to the desired code to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^{\perp}$ is applied to the desired code according to the following form:

$$P_s^{\perp} x = \left(I - S(S^T S)^{-1} S^T\right)x,$$

where x is the desired code.

24. (Currently amended) A system for reducing interference to a desired signal, comprising:

means for demodulating at least one signal from a plurality of signals;

means for constructing one or more interference vectors from the at least one demodulated signal;

means for generating a ~~matrix~~ vector that is a linear combination of one or more interference_vectors, wherein each of the interference vectors comprises components of an interfering signal and

means for using the ~~matrix~~ vector to selectively substantially reduce energy from one or more of the signals thereby reducing interference.

25. (Previously presented) The system of claim 24, further comprising means for searching for_one or more signals from said plurality of signals.

26. (Original) The system of claim 24, further comprising means for determining one or more codes of signals selected from said plurality of signals.

27. (Previously presented) The system of claim 24, wherein the means for generating comprises summing_means for summing a plurality of interference vectors to form a composite interference vector.

28. (Previously presented) The system of claim 24, wherein the means for constructing the one or more interference vectors comprises means for constructing said one or more interference vectors using code information and amplitude information.

29. (Currently Amended) The system of claim 24, wherein the means for using the vector ~~matrix~~ comprises means for generating a cancellation operator for application to a desired code to substantially reduce the energy of the signals selected for energy reduction.

30. (Original) The system of claim 29, wherein the means for generating the cancellation operator comprises means for generating a projection operator $P_s^\perp$ having the following form:

$$P_s^\perp = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

31. (Original) The system of claim 30, further comprising means for applying the projection operator $P_s^\perp$ to the desired code to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^\perp$ is applied to the desired code according to the following form:

$$P_s^\perp x = \left(I - S(S^T S)^{-1} S^T\right) x,$$

where x is the desired code.

32. (Currently amended) A processing engine, comprising:

a ~~matrix~~ composite interference vector generator configured for generating a ~~matrix~~ vector from one or more interference vectors, wherein the ~~matrix~~ composite interference vector is generated based on a linear combination of the one or more interference vectors, and wherein each of the interference vectors comprises a component of_interfering signals; and

an application unit communicatively coupled to the ~~matrix~~ composite interference vector generator and configured for using the composite interference vector ~~matrix~~ to selectively substantially cancel one or more of a plurality of signals.